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*Centenary*

# Academic Libraries and the Cloud: The HKU Experience

學術圖書館與雲端：  
香港大學的經驗

**Peter E Sidorko**

蘇德毅

The University of Hong Kong  
香港大學

21 March 2012





# Overview 概觀

1. Today's environment 今天的環境
2. What is the Cloud? 什麼是雲端？
3. HKU and the Public Cloud 香港大學與公共雲端
4. HKU and the Private Cloud 香港大學與私有雲端

概觀



# 1. Today's environment 今日的環境



Resources abound!

資源豐富！

Alternate forms of publishing  
(open access, social media, etc)

另類的出版（開放取用，社群媒體等）

**It really is anytime, anywhere, now!**

真的可隨時隨地即時使用！



mobile web  
is growing

8x

faster than  
PC-based web

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library technology



Hours



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Mobile Resources



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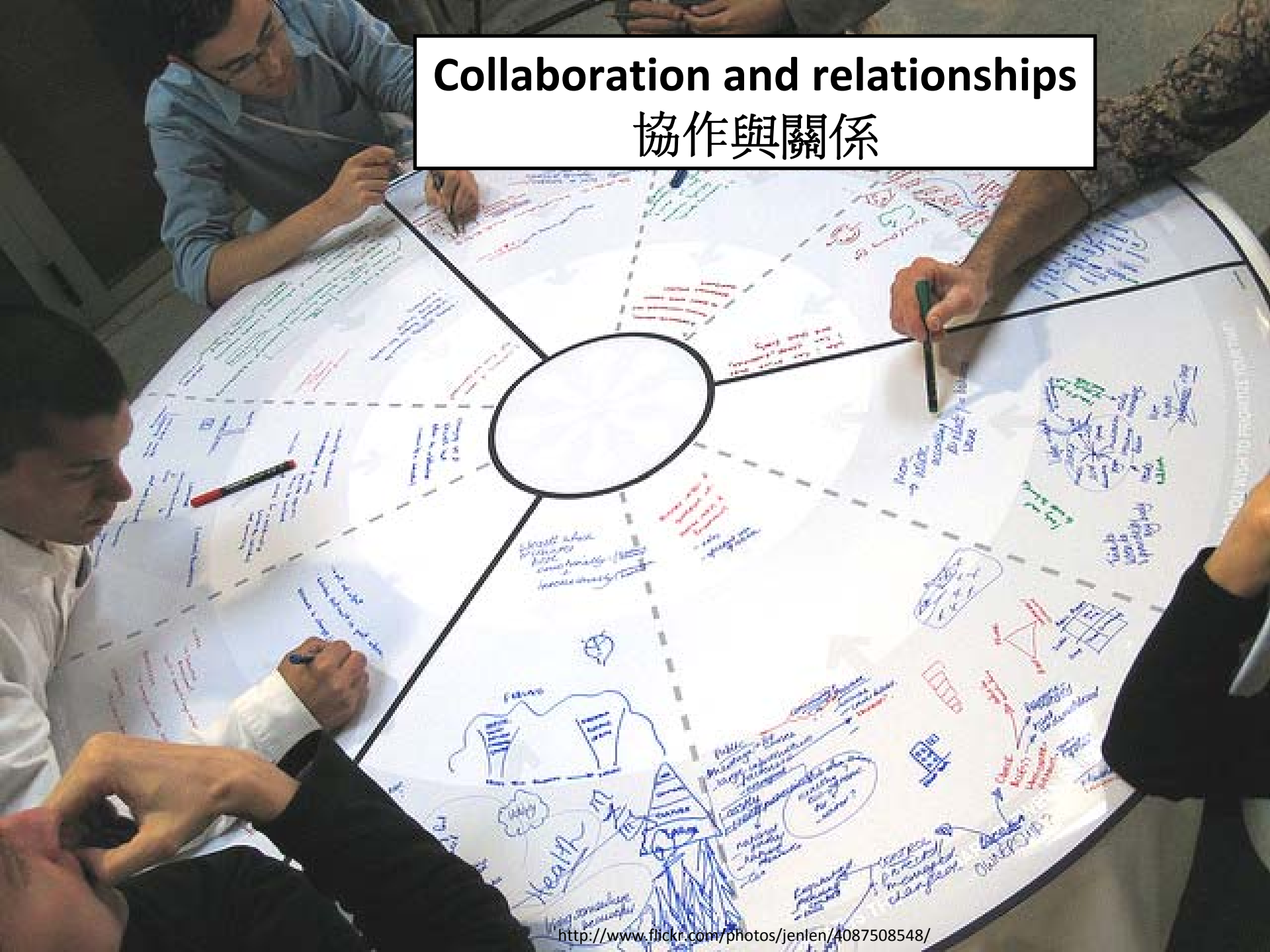
Full Library Website



Anytime,  
anywh  
e

隨時隨地

# Collaboration and relationships 協作與關係





# The Cloud

雲端



# Gartner Newsroom

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### Gartner Identifies the Top 10 Strategic Technologies for 2012

[Gartner Identifies the Top 10 Strategic Technologies for 2012](#)

The top 10 strategic technologies for 2011 include:

**Cloud Computing.** Cloud computing services exist along a spectrum from open public to closed private. The next three years will see the delivery of a range of cloud service approaches that fall between these two extremes. Vendors will offer packaged private cloud implementations that deliver the vendor's public cloud service technologies (software and/or hardware) and methodologies (i.e., best practices to build and run the service) in a form that can be implemented inside the consumer's enterprise. Many will also offer management services to remotely manage the cloud service implementation. Gartner expects large enterprises to have a dynamic sourcing team in place by 2012 that is responsible for ongoing cloudsourcing decisions and management.

"Organizations should start exploratory projects to look at promised candidate technology and kick off a search for combinations of information sources, including social sites and unstructured data that may be mined for insights," said Carl Claunch, vice president and distinguished analyst at Gartner.

The top 10 strategic technologies for 2012 include:

**Media Tablets and Beyond.** Users can choose between various form factors when it comes to mobile computing. No single platform, form factor or technology will dominate and companies should expect to manage a diverse environment with two to four intelligent clients through 2015. IT leaders need a managed diversity program to address multiple form factors, as well as employees bringing their own smartphones and tablet devices into the workplace.

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## Key Trends

The technologies featured in each edition of the *NMC Horizon Report* are embedded within a contemporary context that reflects the realities of the time, both in the sphere of higher education and in the world at large. To ensure this context was well understood, the advisory board engaged in an extensive review of current articles, interviews, papers, and new research to identify trends that were likely to be affecting teaching,

**2 The technologies we use are increasingly cloud-based, and our notions of IT support are decentralized.** The continuing acceptance and use of these technologies is expected to be for higher

education in the next five years. The highest ranked of those trends had significant agreement among the advisory board members, who considered them to be key drivers of educational technology adoptions for the period 2012 through 2017. They are listed here in the order in which the advisory board ranked them.



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- All paid Amazon Cloud Drive plans now include unlimited space for [eligible music](#).
- All Amazon MP3 purchases saved to or uploaded to your Cloud Drive will not count towards your storage limit.

**Amazon Cloud Player**

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### How It Works

### The All-New kindle fire

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### amazon cloud player

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### Cloud Player for Android and Kindle Fire



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### Managing Your Music



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You can download from Cloud Drive at any time using Cloud Player. You can also set all purchases saved to Cloud Drive to automatically download to your computer every time you



iCloud

Overview

What is iCloud?

Features



iTunes  
in the Cloud



Photo Stream



Documents in  
the Cloud



Apps, Books,  
and Backup



Calendar,  
Mail, and Contacts



Find My Friends  
and Find My iPhone

## iTunes in the Cloud

With iCloud, the music you purchase in iTunes appears automatically on all your devices. You can also download your past iTunes purchases. Where you want, when you want.



## 2. So what is the Cloud?

那麼，何為雲端？



# Cloud computing

## 雲端運算

- ... is computing as a service rather than a product, whereby shared resources, software, and information are provided to computers and other devices as a metered service over a network (typically the Internet).

它是服務而非產品，把資源共享、軟件和資訊供給計算機及其他設備，並透過網絡（通常為國際互聯網）作為一個計量服務。

- End users access cloud based applications through a web browser or a light weight desktop or mobile app while the business software and data are stored on servers at a remote location

終端使用者可通過一個網頁瀏覽器或一個羽量級的桌面電腦或智能手機應用程式，去存取儲存在遠距離的伺服器的商業軟件和資料。

# 3. Cloud services

## 雲端服務

- Software (sometimes Application) as a service (SaaS)

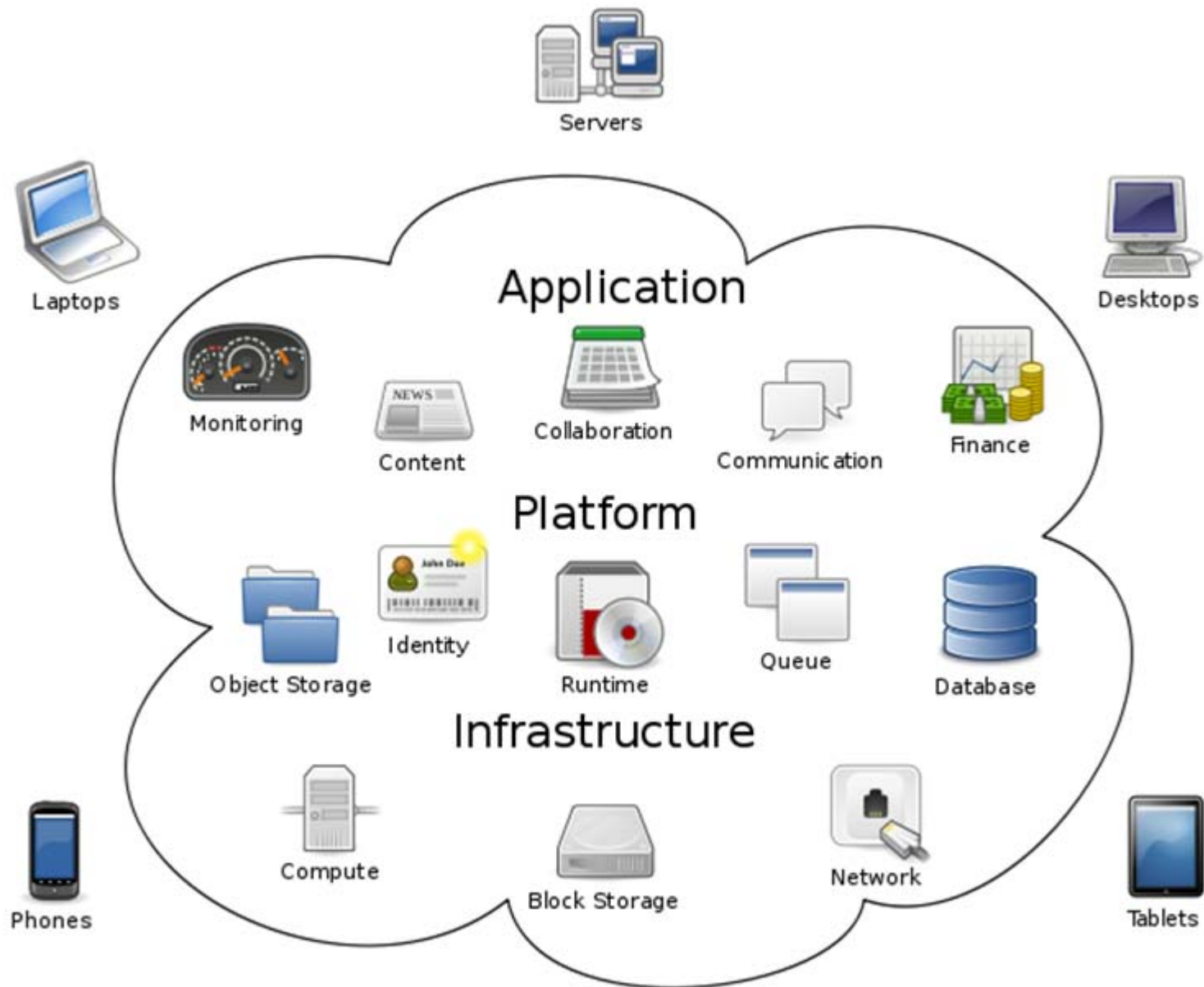
作為服務的軟體（有時是應用程式）（SaaS）

- Platform as a service (PaaS)

作為服務的平台（PaaS）

- Infrastructure as a Service (IaaS)

作為服務的基礎設施（IaaS）



# Cloud Computing



# Benefits

## 好處

- Cost 省成本
- Collaborative, or not 協作，或不
- Portable – access anywhere (almost) 易於攜帶 - 在任何地方(幾乎)可隨時存取
- Less support needed 所需支援較少
- Scalable 可擴展
- No licensing 不需牌照
- Environmental 環保
- Less hardware 硬件較少

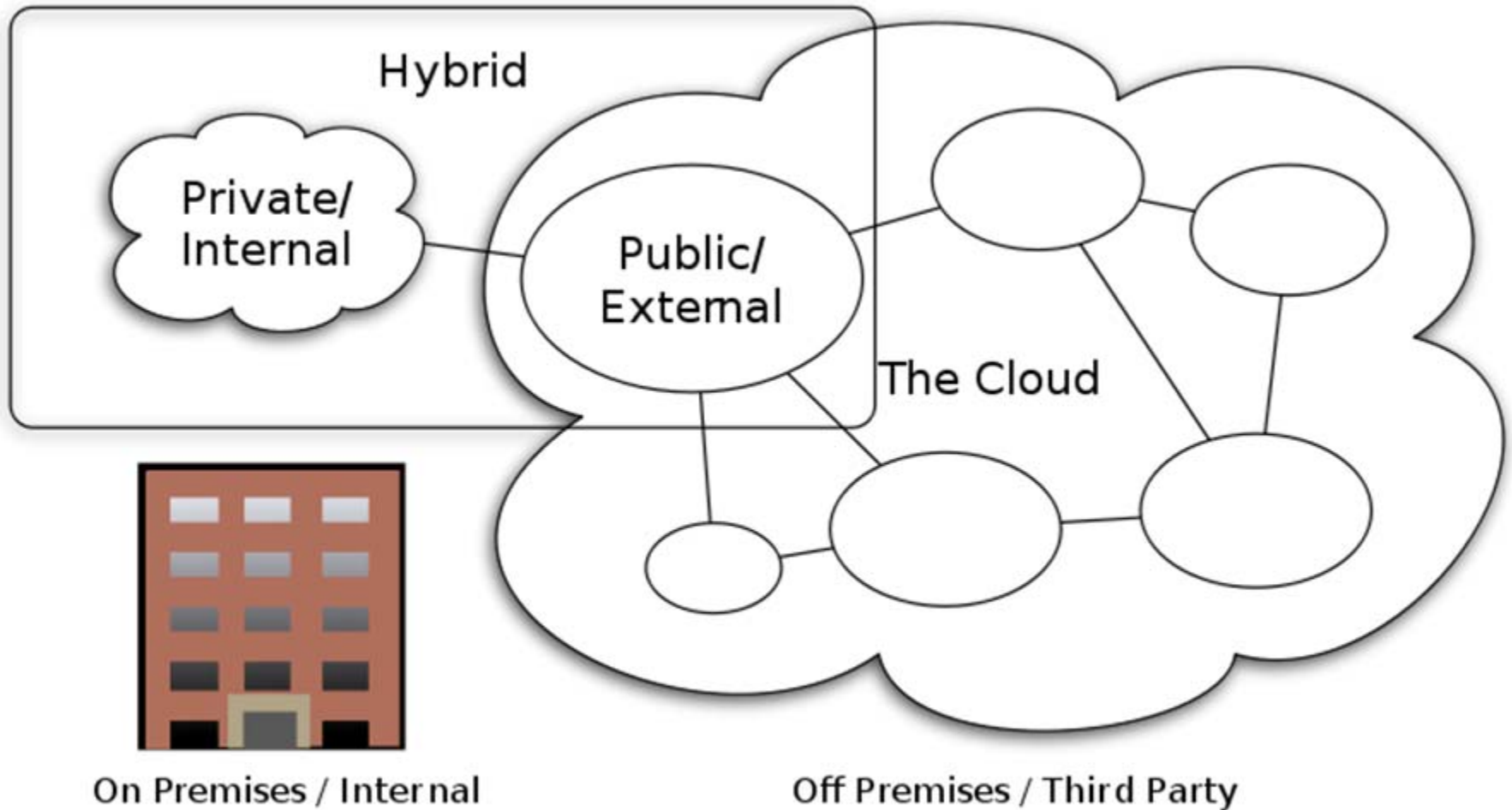
# Concerns

## 關注

- Privacy 私隱
- Security 安全
- Control 監控
- Ownership 所有權
- Reliability 可靠性

# Public vs Private Clouds

## 公共雲端與私有雲端的對比



## Cloud Computing Types

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# The Public Cloud

## 公共雲端

- Publicly accessible  
公開存取
- Free or pay per usage  
免費使用或按次收費
- No contract or commitment  
沒有合約或承諾
- Access via Web Services  
透過Web服務來存取

# The Private Cloud 私有雲端

- Same as Public Cloud but for private/internal resources 跟公共雲端相同，但是用作私人/對內的資源
- Same benefits as Public Cloud but: 有公共雲端的好處，且：
  - Maintain control of resources (security) 維持對資源的監管 (安全)
  - Meets corporate requirements 達到企業的要求
  - Can scale out to the Public Cloud if desired 可擴展至公共雲端

### 3. HKU and the **Public** Cloud?

香港大學和**公共**雲端



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☐ Limit results to available items

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**TITLE** College libraries and student culture : what we now know / edited by Lynda M. Duke and Andrew D. Asher.

**IMPRINT** Chicago : American Library Association, 2012.

Permanent URL for this record=> <http://library.hku.hk/record=b4690876>

LOCATION	CALL #	STATUS
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# Acknowledgments

Erial Project Research Teams

1. Ethnographic Research in Illinois Academic Libraries: The ERIAL Project / David Green 1
2. Pragmatism and Idealism in the Academic Library: An Analysis of Faculty and Librarian Expectations and Values / Mary Thill 15
3. Marketing the Library's Instructional Services to Teaching Faculty: Learning from Teaching Faculty Interviews / Annie Armstrong 31
4. Why Don't Students Ask Librarians for Help? Undergraduate Help-Seeking Behavior in Three Academic Libraries / Nancy Murillo 49
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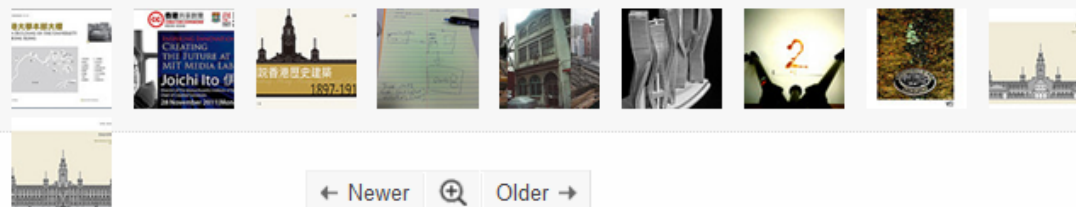
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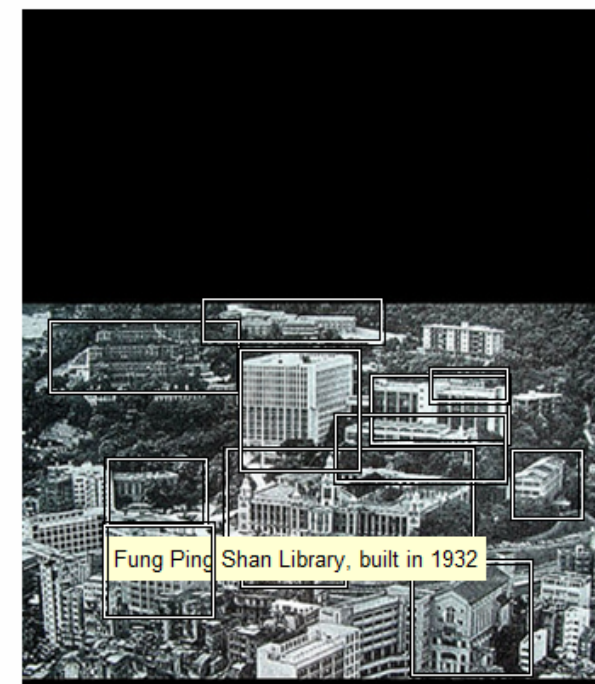
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## The Hong Kong University, Hong Kong 1970s & 2007

HKU 1970s & 2007

The Hong Kong University, officially founded in 1911, is the oldest university in Hong Kong. If the foundation date of the College of Medicine for Chinese, Hong Kong 香港華人西醫書院, the predecessor of HKU is tracked back to 1887, HKU is the oldest existing university (western) in China.

Tsing Hua University 清華大學 was founded in 1911 in the name of Tsinghua College 清華學堂, renamed into Tsinghua College 清華學校 in 1912, reorganized into Tsing Hua University in 1928.

Peking University was founded in 1898 in the name of Imperial Academy of Peking 京師大學堂, renamed



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## HKU SPACE Community College

[\[edit\]](#)

HKU SPACE Community College was established in March 2000. It mainly provides sub-degree programmes for Form 5 or Form 7 graduates to further their studies. There are three main streams of programmes provided, they are Higher Diploma Programmes (2-year and 3-year full time), Pre-Associate Degree (1-year full time) and Associate Degree (2-year full time).



One of the HKU SPACE campuses

## Libraries

[\[edit\]](#)

HKU Libraries (HKUL) was established in 1912 and is the oldest academic library in Hong Kong with over 2.3 million holdings. A web-based library catalogue, [DRAGON](#), allows one to search HKUL's books, journals and other resources.

HKUL now comprises the [Main Library](#) and six specialist branch libraries, the [Dental](#), [Education](#), [Fung Ping Shan](#) (East Asian Language), [Yu Chun Keung Medical](#), [Lui Che Woo Law](#) and the [Music](#) Library. They are located in buildings around the campus with varying opening hours.

## HKUL Digital Initiatives

[\[edit\]](#)

The HKUL Digital Initiatives, through its digitization projects, has opened up online access to local collections originally in print format. The first HKUL Digital Initiative, ExamBase, was launched in 1996 and other projects of scholarly interests were introduced. More digital projects are being developed to provide continuous access to digital content and services. It provides [open access](#) to Chinese and English academic and medical periodicals published in Hong Kong.

## Student life

[\[edit\]](#)

## Student services

[\[edit\]](#)

These include:

- [Career Education and Placement Centre](#)
- [Computer Centre](#)
- [Centre of Development and Resources for Students](#)
- [Personal Development and Counselling Centre](#)
- [Sports and Recreation Programmes/Facilities](#)
- [University Dental Service](#)
- [University Health Service](#)
- [University Museum and Art Gallery](#) (formerly Fung Ping Shan Museum)

## Student accommodation and hall education

[\[edit\]](#)

22°17′03″N 114°08′16″E﻿ / ﻿

City of Hong Kong  
香港大學



University of HKU

entia Et Virtus (Latin)  
格物 (Classical Chinese)

om and Virtue

(as Hong Kong College  
edicine for Chinese)

c  
onald Tsang

TSUT Lap-chee

Vice-  
Chancellor

**Students** 21,652 (2009 total)<sup>[2]</sup>

- Administration
- Research and endowment
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11 Nov

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21 Sep

Endnote X5 (Windows) is now ready for download. Please visit - [lib.hku.hk/endnote/download...](http://lib.hku.hk/endnote/download...) Mac version will be available soon.

# HKU Faculty Education Spaces: Have Your Say

No description

Bob Fox  
22 April 2011

## Re-designing Education Faculty Spaces: Have Your Say!

Nancy Law and Bob Fox  
Faculty of Education  
The University of Hong Kong



Presented at the Faculty of Education, The University of Hong Kong, 22 April 2011.  
Faculty of Education, The University of Hong Kong  
Nancy Law  
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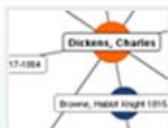


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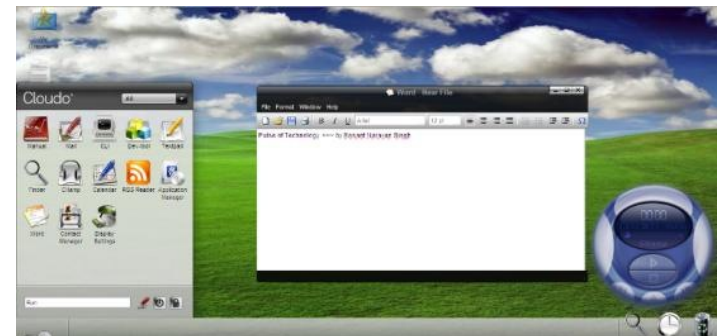
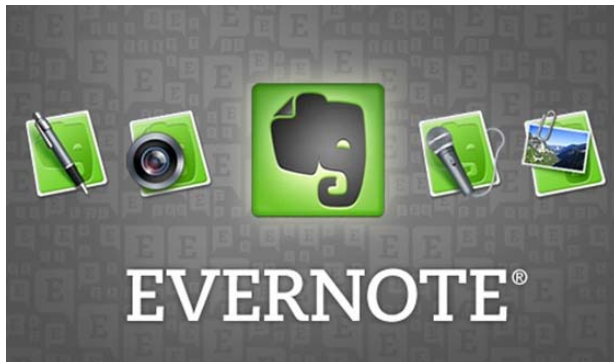
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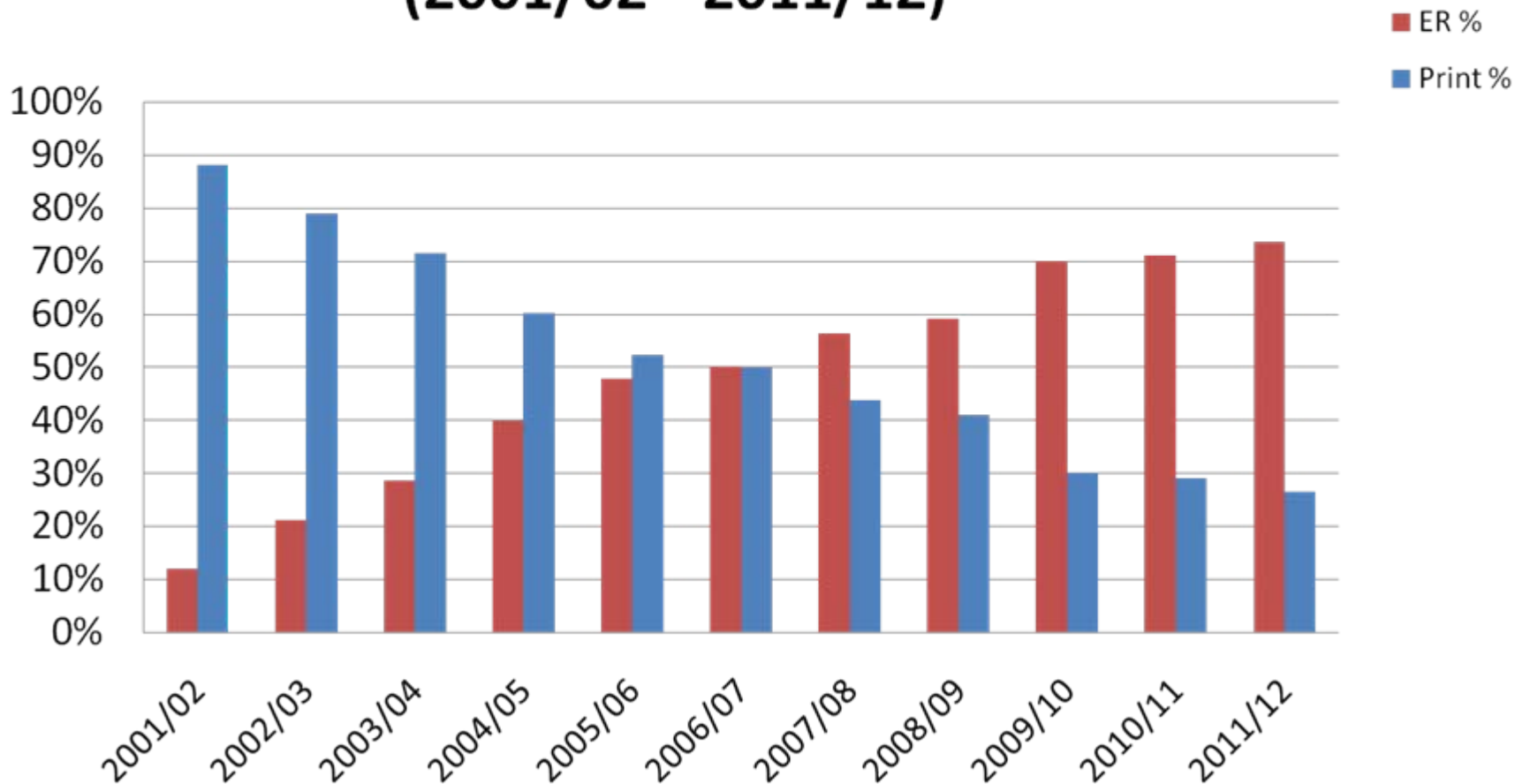
## 4. HKU and the **Private** Cloud?

香港大學和**私有**雲端？

# Electronic Resources vs Print Budget

電子資源與印刷資源經費的比較

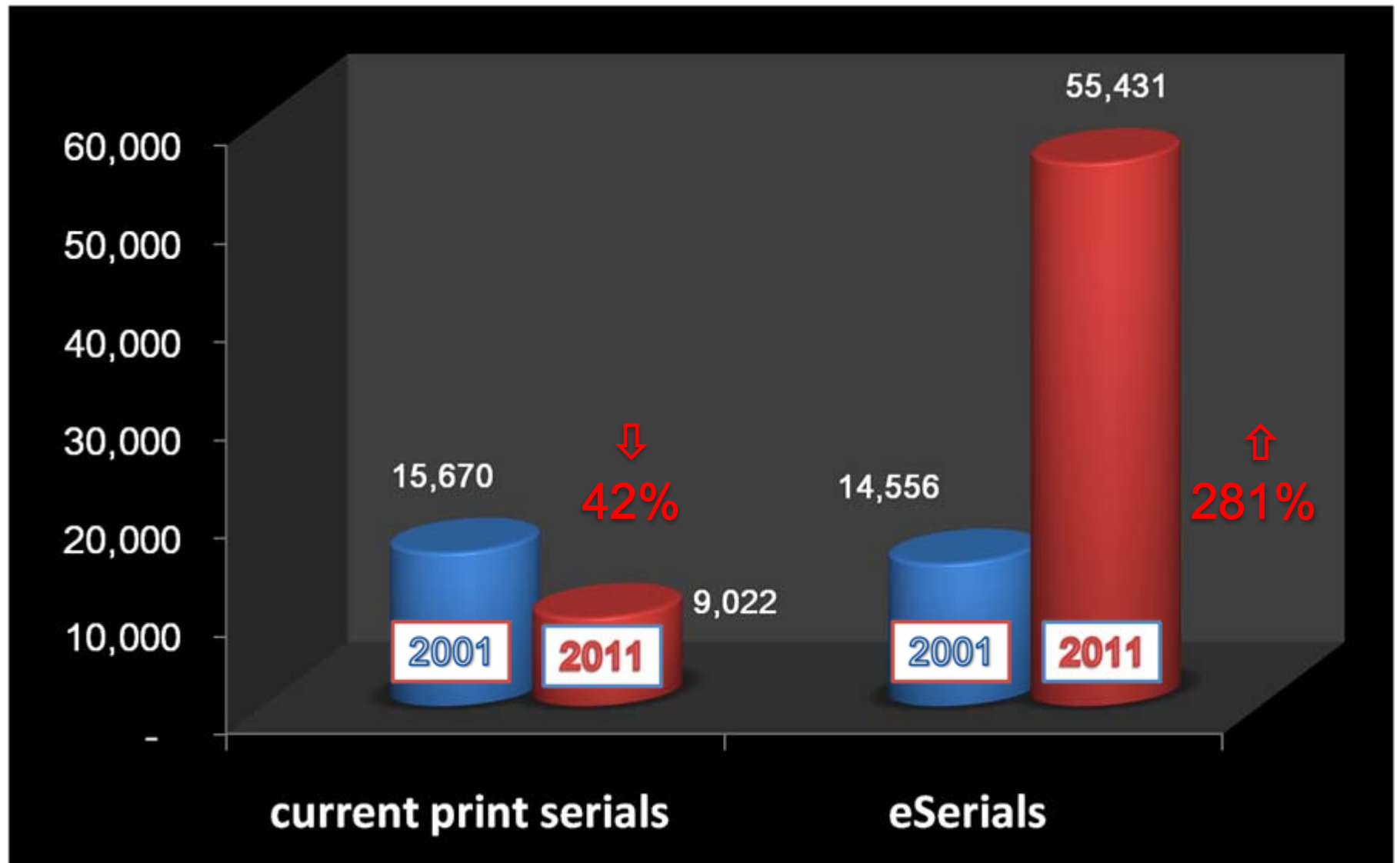
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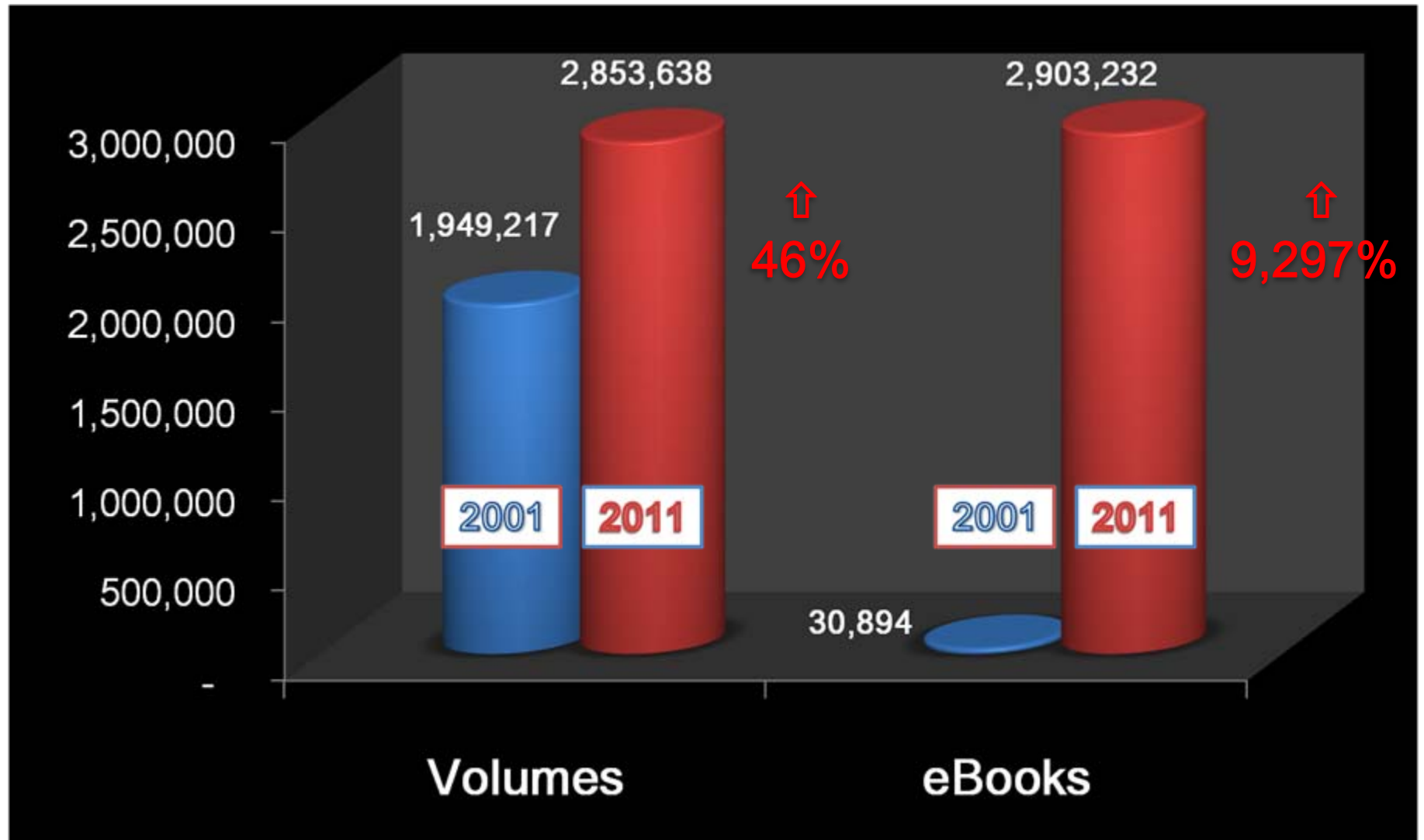
# Going Digital at HKU

## 香港大學邁向數碼化的情況



# Going Digital at HKU

## 香港大學邁向數碼化的情況



**“The days of each library operating its own local servers have largely passed. This approach rarely represents the best use of library space and personnel.”**

**Marshall Breeding**

**Director for Innovative Technologies and Research, Jean and Alexander Heard Library, Vanderbilt University**

「每所圖書館獨立操作自己伺服器的時代大致已過去了。這種操作模式不是圖書館最有效的空間和人力資源運用。」

**Marshall Breeding**

**美國范德比爾特大學圖書館**

# Server Consolidation with “Cloud” Technology

「雲端」科技來合併伺服器

Traditional Way傳統方法 (Physical to Physical) (由物質至物質)
• 5 servers 5個伺服器 = $\$A$ 
• Direct Connected Storage直接連接存儲
• 3 chassis (total 5TB) 3個機殼 (總數為5TB) = $\$B$ 
• Manpower required需要人手
• 5 weeks5個星期
• 1 IT Officer/Manager1位IT主任/經理 = $\$C$ 
• Virtualization Software Cost虛擬化軟件費用 = $\$Nil$ 
• 4th & 5th 5 year hardware maintenance cost第4年和第5年的5年硬件保養費用 = $\$E$ 
• Total Cost總費用 = $\$A + \$B + \$C + \$E$ 

Virtualization虛擬化 (Physical to Virtual) (由物質至虛擬)
• 2 Servers 2個伺服器 = $\$A \times 0.37$
• Storage Area Network (SAN)存儲區域網路 (SAN)
• 5TB = $\$B \times 0.62$
• Manpower required需要人手
• 2 weeks2個星期
• 1 IT Officer/Manager1位IT主任/經理 = $\$C \times 0.4$
• Virtualization Software Cost虛擬化軟件費用
• Site License. Assuming the life cycle of servers 5 years. 網站牌費. 假設伺服器的生命週期是5年 = $\$D$
• 4th & 5th 5 year hardware maintenance cost第4年和第5年的5年硬件保養費用 = $\$E \times 0.5$
• Total Cost總費用 = $(\$A + \$B + \$C + \$E) \times 0.66$



Thank You!!

謝謝!!